REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Claims 11-14 and 16-24 remain pending. All of the claims are rejected under 35 U.S.C. 103(a) as unpatentable over WO 97/00766 (Van der Loo *et al*) in view of JP 360151311 (Nanri *et al*).

It is respectfully submitted that the practitioner of ordinary skill in the art would not have been motivated by the disclosure of Nanri *et al* to modify the shaped articles of van der Loo *et al* by using the Nanri *et al* polyethylene fibers. Rather, the practitioner skilled in the art relating to ballistic-resistant molded or shaped articles as disclosed by van der Loo *et al* would not have had a reasonable expectation of success in using the paraffin-containing polyethylene fibers which are disclosed by Nanri *et al*.

As the Examiner has pointed out, Nanri *et al* specifically teaches that the polyethylene fibers have excellent resistance against friction (*e.g.*, "particularly excellent resistance against abrasion" English translation, page 3, lines 3-4 from bottom). At least in part, this improvement of resistance against friction abrasion results from the liquid paraffin content of the polyethylene filaments (*see, e.g.*, page 6, lines 1-15).

However, it is precisely in view of the low coefficient of friction that the practitioner would not be motivated to use the polyethylene filaments of Nanri *et al* as the polyethylene filaments of van der Loo *et al* and, in fact, would be dissuaded from using these fibers in the environment of van der Loo *et al*.

In this regard, the practitioner would have expected that fibers with low coefficients of friction would not be suitable for a ballistic-resistant molded article. The low coefficient of friction would have been expected to facilitate an impacting object to move filaments apart and, certainly, this would be very undesirable in a ballistic-resistant article. Such common knowledge is evidenced in the prior art.

For example, attention is directed to the review book, "Ballistic materials and penetration mechanics" by Roy C. Laible (Ed.), Elsevier Science Publishers (1980) of which pages 75, 81 and 88 are attached hereto. At page 75, first full paragraph, the author explains that nylon fibers occasionally "fell below its projected performance of a ballistic limit ..." and explained that one reason "for this failure was considered to be the slipperiness of the fabric due to residual spinning oils which in turn caused yarn-to-yarn slippage."

On page 81 the author observes that the ballistic resistance of polypropylene is always lower than that of nylon despite its higher strength and puts forth that "one possible reason for the relatively low ballistic resistance of polypropylene is the low yarn-to-yarn friction exhibited by polyolefin type fibers." In fact, it is reported that attempts to increase the yarn-to-yarn friction or to decrease the friction with a lubricant "were unsuccessful as judged by little change in ballistic limit values."

The adverse effects of low friction is further discussed on page 88. Here, the author explains that losses in the ballistic protectivity of Kevlar fabric against 0.22 caliber projectiles results from exposure to moisture which "can lubricate the yarns enough to aid the passage of the missile without breaking yarns and absorbing energy."

Therefore, it is abundantly clear that the practitioner would have recognized the alleged advantages of the polyethylene fibers of Nanri *et al*, for the disclosed applications in clothing and ropes, as a profound disadvantage in anti-ballistic applications such as the ballistic-resistant molded articles of van der Loo *et al*.

It is, presumably, for this very reason that the prior art attempts to improve the anti-ballistic performance of fibers with low coefficients of friction. For example, attention is directed to U.S. 5,035,111 and U.S. 5,225,241, copies enclosed.

U.S. 5,035,111 states at column 1, lines 12-31, that filaments having high tensile strength and a high modulus tend to have high molecular weights and be highly drawn.

> The surface of such filaments is in general very smooth. Accordingly, the coefficients of friction of such filaments are very low. Such filaments, or rather yarns, wovens, knits or nonwovens produced therefrom, are used for many purposes where the high tensile strength and the high modulus ... are useful. ... However, wovens or nonwovens produced from such filaments have the disadvantage that the smooth surface, and hence the low coefficient of friction, of the filaments ... and the good gliding action make it relatively easy for an impacting bullet to

> move these filaments apart, so that despite the high tensile strengths and moduli of such plastic filaments, the bulletproof wovens and non-wovens produced therefrom are still not totally satisfactory.

U.S. 5,225,241 at column 1, lines 14-20, similarly reveals that such fibers (having a low coefficient of friction) "when used in the construction of ballistic fabrics, exhibit poor energy transfer to neighboring fibers during ballistic impact, resulting in loss of stopping efficiency."

Accordingly, it is respectfully submitted that the discovery by Applicants that shaped articles obtained by compression of one or more fiber layers of polyolefins fibers, wherein the layers contain 0.05 to 5% of a solvent for the polyolefin, have improved properties for anti-ballistic shaped articles, would not have been *prima facie* obvious over the disclosure of van der Loo *et al* in view of Namri *et al.*

In light of the clear teachings away from the use of fibers, such as polyolefins, with low coefficients of friction, in view of the adverse effects of low coefficient of friction with respect to the properties of an antiballistic fabric product, modification of van der Loo et al. includes the use of paraffin-containing polyethylene fibers, must be found to be non-obvious.

Therefore, withdrawal of the rejection and passage of the application to issue is earnestly solicited.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 03-3975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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